Washington State Department of Transportation

Telecommunications
Voice Evolution Road Map

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Voice Architecture

In 1990 WSDOT installed the first large AT&T PBX in the Olympia Transportation Building. Since then a total of 16 sites have been installed statewide and networked to meet the needs of WSDOT. We have made many improvements along the way such as:

- **4-digit voice/video network that shares services and functionality statewide.**
- **Voice over IP (VoIP) telephones and services to remote sites and sheds.**
- **IP Convergence: This allows DOT to use the existing Ethernet High Bandwidth infrastructure to connect the 16 PBX's to remote Gateways using IP.**
- **Unified Communications and Video to Desktop Integration**
- **The ability to now use the latest technology, SIP (Session Initiation Protocol) for creating trunks and connections over the existing IP data network.**

Avaya, Legacy PBX

Key PBX Services/Features

- **Local Survivable Mode:** At key locations statewide, WSDOT has installed remote gateways that are equipped with Survivable servers that can support all local services in event that connectivity is lost to a site. This has provided a considerable cost avoidance, increased reliability and avoided employee downtime.

Digital and VoIP Phones

- **VoIP and IP Convergence:** Using VoIP/ IP convergence technology has allowed WSDOT to reduce the need for stand-alone voice systems. This eliminates the need for separate Voice T-1 circuits by leveraging the existing data Ethernet network for substantial cost savings. This means that a PBX server at a Regional HQ can hook up to an IP Gateway out in a remote site using an existing IP connection instead of using a Voice T-1 circuit. Using IP Convergence, WSDOT is able to leverage the use of approximately 90% of the current digital phone base. Again saving money by using existing voice infrastructure while leverage VoIP services.
- **511 Automated Traffic System:** This system provides real time information to the mobile callers with road and mountain pass condition reports, construction reports, transit info, weather, etc. 511 is a statewide service and can handle up to 192 talk channels with Speech Recognition and Text to Speech services. The 511 system averaged over 187,000 calls per month during 2009.

511 IR, Speech, Text Servers

- **WSDOT's Emergency Operation Centers (EOC):** The EOC's are supported by the voice network's converged technology to enable the most cost efficient and reliable services during an emergency.
- **RedSky Emergency 911 (E911) system:** This system ensures that the correct local address for every phone extension is forwarded to the correct 911 dispatch center across the state.
- **Call Center Solutions:** This service provides automated call distribution for large volumes of calls to information agents, that includes real time and historical call statistics that are handled by the PBX systems.

PBX and Audio Bridge Servers

- **Audio Conferencing Bridge Server:** This service can host up to 100 audio connections for voice conferencing capabilities across the state via the WSDOT 4-digit network, public network or SCAN.
- **Legislative Audio System:** Provides 4-digit access to the 11 audio channels for House and Senate Legislative hearings providing additional cost savings and increasing the flow of info.